AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph no. [0034] with the following amended paragraph:

The sensor element 7 includes a disc-shaped proton-conductive layer 13 having opposite first and second surfaces and disc-shaped first and second electrodes 15 and 17 disposed in contact with the first and second surfaces of the proton-conductive layer 13, respectively. The proton-conductive layer 13 permits the migration of protons (H+) therethrough from one surface to the other surface, e.g., from the first surface to the second surface by a pumping action. Desirably, the proton-conductive layer 13 is made of a material operatable at relatively low temperatures (e.g. 150°C or lower). A specific example of the material of the proton-conductive layer 13 is a fluorocarbon resin available under the DuPont registered trade name of "NAFION". Each of the first and second electrodes 15 and 17 is a porous electrode containing carbon as a main ingredient. Catalyst layers of e.g. platinum (not shown) are applied to surfaces of the respective first and second electrodes 15 and 17 in contact with the proton-conductive layer 13. The sensor element 7 is installed in the support member 3, with the first and second surfaces of the proton-conductive layer 13 directed toward the front and base end sides of the support member 3, respectively, and with the first electrode 15 brought into contact with the protruded center portion 25 of the bottom 19 of the support member 3.

Please replace the paragraph no. [0076] with the following amended paragraph:

As shown in FIGS. 13, 14A and 14B, the second support member 109 is mainly made of a ceramic material and formed into a substantially disc plate. More specifically, the second support member 109 includes first to fourth layers 157 to 160 laminated together. The first and second layers are ring-shaped so as to define a recessed portion 153 in the front end side of the

support member 109, whereas the third and fourth layers 159 and 160 are disc-shaped. Each of the first to fourth layers 157 to 160 is made of ceramic, such as alumina. The support member 109 further includes a disc-shaped front end electrode 161 arranged on a front end side of the third layer 159, a disc-shaped base end electrode 163 arranged on a base end side of the fourth layer 160 and an electrically conductive layer 165 arranged between the third and fourth layers 159 and 160, as shown in FIGS. 14A and 14B. Through holes 167 and 169 are formed in the third and fourth layers 159 and 169, respectively, so as to allow axial offsets therebetween, and have metal-plated inner surfaces for electrical connections between the front end electrode 161 and the conductive layer 165 and between the conductive layer 165 and the base end electrode 163. The second support member 109 is disposed on the base end side of the sensor element ~~7~~107 with the second electrode ~~17~~117 placed in the recessed portion 153 of the support member 109 and brought into contact with the front end electrode 161 of the support member 109.

Please replace the paragraph no. [0078] with the following amended paragraph:

Alternatively, the second support member 109 may have a ring-shaped first layer 171, a disc-shaped second layer 173, a disc-shaped third layer 175 and a disc-shaped fourth layer 177 laminated together as shown in ~~FIGA~~FIGS. 15A to 15D. In this alternative, four gas return channels 179 are formed in the second layer 173 at locations 90 degrees apart from each other, so that each of the gas return channels 179 communicates at an inner side thereof with a space 181 surrounded by the first layer 171. Electrodes (not shown) are arranged on the second and fourth layers 173 and 177, respectively. Also, electrically conductive layers (not shown) are arranged between the second and third layers 173 and 175 and between the third and fourth layers 175 and

177. Through holes (not shown) are formed in the respective second, third and fourth layers 173, 175 and 177 for electrical connection between the electrodes through the conductive layers.